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## Robust Modelling, Analysis and Control in Aerospace: from LFT and H-infinity to LPV

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Abstract
In this talk several aerospace industrial study cases are used to illustrate the validity of robust modeling, analysis and control techniques. The results showcase the fundamental importance of the linear fractional transformation (LFT) and linear parameter varying (LPV) robust modeling paradigms. These models enable the application of robust analyses methods (e.g. structured singular value and integral quadratic constraints) that complement, and serve as a bridge for, the classical linear and nonlinear simulation analyses used by industry. Furthermore, their concurrent use with robust control synthesis approaches (from structured H-infinity to LPV) allows to formalize a modeling, analysis and design framework that facilitates the inherently difficult performance versus robustness trade-off across wide system variations. As a conclusion of the talk it is shown that such a framework using LPV control design is (at least for the case of launcher systems in atmospheric phase) more methodological, capable and transparent than the more advanced and complex adaptive approaches currently in favour in academia and industry.

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